REMARKS

Claims 15-30 were previously pending. No claims have been canceled or amended.

Applicants note with appreciation the Examiner's indication that the application is in condition for allowance except for his request to comply with the new interference rules.

Information Disclosure Statements

The Applicants submit herewith two Information Disclosure Statements (IDS) seeking additional compliance with MPEP § 2001.06 identifying litigation related documents. One IDS provides references potentially subject to a protective order in an now-settled litigation in related patents, and the other IDS provides a copy of a Federal Circuit decision based that litigation. While the Applicants do not believe that these references will affect the patentability of the pending claims, the Applicants respectfully request the consideration of the same.

Interference Issues

A Request for Interference was filed in this case on September 1, 1998. Since that date, the rules regarding interference practice were amended. The present Office Action requests compliance with the rules propagated after the September 1, 1998 filing. Accordingly, Applicants herewith resubmit the request to have an interference declared between this application and an unexpired patent. Pursuant to 37 CFR § 41.202, Applicants submit the following information.

(1) Identification of the Patent -- 37 CFR § 41.202(a)(1)

Applicants seek an interference with U.S. Patent No. 5,662,105 (the '105 patent), which issued on September 2, 1997 to Jonathon Tien. The '105 patent is entitled SYSTEM AND METHOD FOR THE EXTRACTION OF PHYSIOLOGICAL SIGNALS, and at issuance was assigned to SpaceLabs Medical, Inc., of Redmond, WA.

(2) Presentation of the Proposed Counts -- 37 CFR § 41.202(a)(2)

Claims 1-7, 10-14, 17 and 18 of the '105 patent are believed to interfere with Claims 15-19, 22-25, 27 and 28 of the present application. Proposed Count 1, presented below, corresponds to these claims.

Claims 8, 9, 15, 16, 19 and 20 of the '105 patent are believed to interfere with Claims 20, 21, 26, 29 and 30 of the present application. Proposed Count 2, also presented below, corresponds to these claims.

Count 1

A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:

first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of first and second wavelengths, respectively;

a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source; said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;

an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error

output is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;

wherein said first and second portions of said first and second generated signals and a first ratio constant have a defined mathematical relationship;

a reference signal generator to generate said reference signal based on a possible value of said first ratio constant; and

a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value of said first ratio constant.

Count 2

A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:

first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of first and second wavelengths, respectively;

a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a

second portion arising from a first interference source; said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;

an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error output is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;

wherein said first and second portions of said first and second generated signals and a first ratio constant have a mathematical relationship derived from the following model:

$$S_{red} = s_1 + n_1$$

$$S_{IR} = s_2 + n_2$$

$$s_1 = r_a s_2$$

$$n_1 = r_v n_2$$

where S_{red} corresponds to said first generated signal, s_1 corresponds to said first portion of said first generated signal, n_1 corresponds to said second portion of said first generated signal, S_{IR} corresponds to said second generated signal, s_2 corresponds to said first portion of said second generated signal, n_2 corresponds to said second portion of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal;

a reference signal generator to generate said reference signal based on a possible value of said first ratio constant; and

a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value of said first ratio constant.

(3) Explanation of Why the Claims Interfere -- 37 CFR § 41.202(a)(3)

The following claim charts compare the claims of the present application with the claims of the '105 patent. The claim chart also shows why the claims interfere within the meaning of 37 CFR § 41.203(a).

COMPARISON OF PENDING CLAIMS 15 - 30 WITH THE '105 PATENT CLAIMS

Pending Claim 15	Tien Claim 1	Reason for Interference
A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:	A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:	The preamble recitation of each of pending Claim 15 and '105 patent Claim 1 is identical. Applicants take no position as to whether this portion of the claims constitutes a limitation. To the extent the preamble recitation constitutes a limitation, each claim would anticipate the other as to the preamble recitation.
first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of	first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of	Pending Claim 15 and '105 patent Claim 1 would each anticipate the other as to this limitation.

first and second wavelengths, respectively;	first and second wavelengths, respectively;	
a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source; said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;	a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference light source; said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference light source;	Pending Claim 15 and '105 patent Claim 1 would each anticipate or render obvious the other as to this limitation.
an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error output is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;	an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error output is coupled to said adaptive filter to adjust said adaptive filter so said error signal has a minimum value;	Pending Claim 15 and '105 patent Claim 1 would each anticipate or render obvious the other as to this limitation.
wherein said first and second portions of said first and second generated signals and a first ratio constant have a defined mathematical relationship;	a storage location containing a mathematical relationship of said first and second portions of said first and second generated signals and a first ratio constant;	Pending Claim 15 and '105 patent Claim 1 would each anticipate or render obvious the other as to this limitation.
a reference signal generator to	a reference signal generator to	Pending Claim 15 and '105

generate said reference signal based on a possible value of said first ratio constant; and	generate said reference signal based on an estimated value of said first ratio constant; and	patent Claim 1 would each anticipate or render obvious the other as to this limitation.
a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value of said first ratio constant.	a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value of said first ratio constant.	Pending Claim 15 and '105 patent Claim 1 would each anticipate or render obvious the other as to this limitation.

Pending Claim16	Tien Claim 3	Reason for Interference
The system of Claim 15 wherein said output signal received by said peak detector is selected from a set of output signals comprising approximations to said first and second signal portions of said first and second signals, wherein said error output and said adaptive filter output generate output signals of said set.	The system of Claim 1 wherein said output signal received by said peak detector is selected from a set of output signals comprising said error signal output and said adaptive filter output.	Pending Claim 16 and '105 patent Claim 3 would each anticipate or render obvious the other.

Pending Claim17	Tien Claim 4	Reason for Interference
The system of Claim 15, further including an oxygen saturation calculating circuit to determine blood oxygen saturation of the subject based on said calculated value of said first ratio constant.	The system of Claim 1, further including an oxygen saturation calculating circuit to determine blood oxygen saturation of the subject based on said calculated value of said first ratio constant.	Pending Claim 17 and '105 patent Claim 4 would each anticipate or render obvious the other.

Pending Claim 18	Tien Claim 5	Reason for Interference
The system of Claim 15, further including a data table interrelating said calculated value of said first ratio constant with blood oxygen saturation level.	The system of Claim 1, further including a data table interrelating said calculated value of said first ratio constant with blood oxygen saturation level.	Pending Claim 18 and '105 patent Claim 5 would each anticipate or render obvious the other.

Pending Claim 19	Tien Claim 7	Reason for Interference
The system of Claim 15 wherein said first and second wavelengths are in the red and infrared wavelength range, respectively.	The system of Claim 1 wherein said first and second wavelengths are in the red and near-infrared wavelength range, respectively.	Pending Claim 19 and '105 patent Claim 7 would each anticipate or render obvious the other.

Pending Claim 20	Tien Claim 8	Reason for Interference
The system of Claim 15 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ and $s_1 = r_a s_2$ where S_1 corresponds to said first portion of said first generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant	The system of Claim 1 wherein said mathematical relationship has the following form: $R^*(t) = \frac{\alpha R(t) - \alpha\beta r(t)}{\alpha - \beta}$ where R*(t) corresponds to said first portion of said first generated signal, R(t) corresponds to said first generated signal, including said first and second portions of said first generated signal, r(t) corresponds to said second generated signal, including said first and second portions of said second generated signal, α is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and β is a second ratio constant and	Pending Claim 20 and '105 patent Claim 8 would each anticipate or render obvious the other.

and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	

Pending Claim 21	Tien Claim 9	Reason for Interference
The system of Claim 15 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ where s_2 corresponds to said first portion of said second generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	The system of Claim 1 wherein said mathematical relationship has the following form: $r^*(t) = \frac{R(t) - \beta r(t)}{\alpha - \beta}$ where $r^*(t)$ corresponds to said first portion of said second generated signal, $R(t)$ corresponds to said first generated signal, including said first and second portions of said first generated signal, $r(t)$ corresponds to said second generated signal, including said first and second portions of said second generated signal, α is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and β is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	Pending Claim 21 and '105 patent Claim 9 would each anticipate or render obvious the other.

Pending Claim 22	Tien Claim 10	Reason for Interference
A method for the enhancement of physiological signals for the measurement of blood oxygen in a subject,	A method for the enhancement of physiological signals for the measurement of blood oxygen in a subject,	The preamble recitation of each of pending Claim 22 and '105 patent Claim 10 is identical. Applicants take

the method comprising the steps of:	the method comprising the steps of:	no position as to whether this portion of the claims constitutes a limitation. To the extent the preamble recitation constitutes a limitation, each claim would anticipate the other as to the preamble recitation.
directing light from first and second light sources of different wavelengths toward the subject;	directing light from first and second light sources of different wavelengths toward the subject;	Pending Claim 22 and '105 patent Claim 10 would each anticipate the other as to this limitation.
detecting signals from said first and second light sources after interaction with the subject and generating first and second signals corresponding to an intensity of said first and second detected signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source, said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;	detecting signals from said first and second light sources after interaction with the subject and generating first and second signals corresponding to an intensity of said first and second detected signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source, said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference light source;	Pending Claim 22 and '105 patent Claim 10 would each anticipate or render obvious the other as to this limitation.
coupling said first generated signal to a signal input of an adaptive signal processor having an adaptive filter having an input to receive a reference signal, and an output, and an error output generating an error signal wherein said error signal is coupled to said adaptive filter to adjust said adaptive filter	coupling said first generated signal to a signal input of an adaptive signal processor having an adaptive filter having an input to receive a reference signal, and an output, and an error output generating an error signal wherein said error signal is coupled to said adaptive filter to adjust said adaptive filter	Pending Claim 22 and '105 patent Claim 10 would each anticipate or render obvious the other as to this limitation.

so that a function of said error signal has a minimum;	so that a function of said error signal has a minimum value;	
coupling an output signal from said adaptive signal processor to a peak detector and calculating a first ratio value corresponding to a first detected peak value of said error signal over a predetermined range of possible ratio values;	coupling an output signal from said adaptive signal processor to a peak detector and calculating a first ratio value corresponding to a first detected peak value of said error signal over a predetermined range of possible ratio values;	Pending Claim 22 and '105 patent Claim 10 would each anticipate the other as to this limitation.
generating a first reference signal based on a mathematical relationship of said first and second portions of said first and second generated signals, and said first ratio value; and	generating a first reference signal based on a mathematical relationship of said first and second portions of said first and second generated signals, and said first ratio value; and	Pending Claim 22 and '105 patent Claim 10 would each anticipate the other as to this limitation.
coupling said first reference signal to said adaptive filter input wherein said filter output generates an estimate of said first portion of said first generated signal.	coupling said first reference signal to said adaptive filter input wherein said filter output generates an estimate of said first portion of said first generated signal.	Pending Claim 22 and '105 patent Claim 10 would each anticipate the other as to this limitation.

Pending Claim 23	Tien Claim 11	Reason for Interference
The method of Claim 22 wherein said output signal from said adaptive signal processor is said error signal and said calculated first ratio value is based on said first detected peak value in said error signal.	The method of Claim 10 wherein said output signal from said adaptive signal processor is said error signal and said calculated first ratio value is based on said first detected peak value in said error signal.	Pending Claim 23 and '105 patent Claim 11 would each anticipate or render obvious the other.

Pending Claim 24	Tien Claim 12	Reason for Interference
The method of Claim 22 wherein said output signal from said adaptive signal processor is derived from said adaptive filter output and said calculated first ratio value is based on said first detected peak value in said output	The method of Claim 10 wherein said output signal from said adaptive signal processor is derived from said adaptive filter output and said calculated first ratio value is based on said first detected peak value in said output	Pending Claim 24 and '105 patent Claim 12 would each anticipate or render obvious the other.

signal derived from said adaptive filter output.	signal derived from said adaptive filter output.	

Pending Claim 25	Tien Claim 14	Reason for Interference
The method of Claim 24, further including the step of generating an approximation to said first portion of said second generated signal based on said mathematical relationship and said calculated first ratio value.	The method of Claim 12, further including the step of generating said first portion of said second generated signal based on said mathematical relationship and said calculated first ratio value.	Pending Claim 25 and '105 patent Claim 14 would each anticipate or render obvious the other.

Pending Claim 26	Tien Claim 15	Reason for Interference
The method of Claim 25 wherein said first ratio value is a ratio of said first portion of said first generated signal to said first portion of said second generated signal.	The method of Claim 14 wherein said first ratio value is a ratio of said first portion of said first generated signal to said first portion of said second generated signal.	Pending Claim 26 and '105 patent Claim 15 would each anticipate or render obvious the other.

Pending Claim 27	Tien Claim 17	Reason for Interference
The method of Claim 22, further including the step of determining a blood oxygen saturation level of the subject based on said calculated first ratio value.	The method of Claim 10, further including the step of determining a blood oxygen saturation level of the subject based on said calculated first ratio value.	Pending Claim 27 and '105 patent Claim 17 would each anticipate or render obvious the other.

Pending Claim 28	Tien Claim 18	Reason for Interference
The method of Claim 22, further including the step of determining a blood oxygen saturation level of the subject using a data table interrelating said calculated first ratio value with blood oxygen saturation level.	The method of Claim 10, further including the step of determining a blood oxygen saturation level of the subject using a data table interrelating said calculated first ratio value with blood oxygen saturation level.	Pending Claim 28 and '105 patent Claim 18 would each anticipate or render obvious the other.

Pending Claim 29	Tien Claim 19	Reason for Interference
The method of Claim 22 wherein said mathematical	The method of Claim 10 wherein said mathematical	Pending Claim 29 and '105 patent Claim 19 would

relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ and $s_1 = r_a s_2$ where S_1 corresponds to said first portion of said first generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	relationship has the following form: $R^*(t) = \frac{\alpha R(t) - \alpha\beta r(t)}{\alpha - \beta}$ where $R^*(t)$ corresponds to said first portion of said first generated signal, $R(t)$ corresponds to said first generated signal, including said first and second portions of said first generated signal, $r(t)$ corresponds to said second generated signal, including said first and second portions of said second generated signal, α is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and β is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	each anticipate or render obvious the other.

Pending Claim 30	Tien Claim 20	Reason for Interference
The method of Claim 22 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ where S_2 corresponds to said first portion of said second generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including	The method of Claim 10 wherein said mathematical relationship has the following form: $r^*(t) = \frac{R(t) - \beta r(t)}{\alpha - \beta}$ where $r^*(t)$ corresponds to said first portion of said second generated signal, $R(t)$ corresponds to said first generated signal, including said first and second portions of said first generated signal, $r(t)$ corresponds to said second generated signal,	Pending Claim 30 and '105 patent Claim 20 would each anticipate or render obvious the other.

said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	including said first and second portions of said second generated signal, α is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and β is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	

(4) Applicants Will Prevail on Priority -- 37 CFR § 41.202(a)(4)

Applicants will prevail on priority in an interference, if declared. Applicants would be the Senior Party in an interference. In particular, the '105 patent lists an earliest priority date of May 17, 1995. Applicants are entitled to constructively claim priority to, *inter alia*, U.S. Application No. 08/132,812, filed October 6, 1993. Accordingly, the Applicants can prove a constructive reduction to practice earlier than the earliest constructive reduction to practice of the '105 patent. Moreover, Applicants are able to prove a date of invention prior to constructive reduction to practice. For at least these reasons, Applicants will prevail on priority if an interference is declared.

(5) Written Description/Constructive Reduction to Practice -- 37 CFR § 41.202(a)(5),(6)

The following tables illustrate the written description support for Claims 15-30 in the pending application and priority applications[1].

Claim 15

A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:	**09/144,897 (September 1, 1998)** p. 6, ll. 4-9; p. 6, l. 25 – p. 7, l. 13; p. 63, l. 33 – p. 64. l. 12;

[1] The cited references are not exhaustive. In the event interference is declared, Applicants reserve the right to set forth additional citations or rely on one or more applications not cited herein.

	08/859,837 (May 16, 1997) p. 6, ll. 4-9; p. 6, l. 25 – p. 7, l. 13; p. 63, l.33 – p. 64. l. 12; **08/320,154 (October 7, 1994)** p. 6, ll. 4-9; p. 6, l. 25 – p. 7, l. 13; p. 63, l. 33 – p. 64. l. 12; **08/132,812 (October 6, 1993)** p. 7, ll. 27-31; p. 8, l. 18 – p. 9, l. 8; p. 78, l. 4 - p. 78, l. 20;
first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of first and second wavelengths, respectively;	**09/144,897 (September 1, 1998)** p. 8, ll. 1-4; p. 64, l. 28 – p. 65, l. 1; p. 65, ll. 18-24; p. 67, ll. 25-27; **08/859,837 (May 16, 1997)** p. 8, ll. 1-4; p. 64, l. 28 – p. 65, l. 1; p. 65, ll. 18-24; p. 67, ll. 25-27; **08/320,154 (October 7, 1994)** p. 8, ll. 1-4; p. 64, l. 28 – p. 65, l. 1; p. 65, ll. 18-24; p. 67, ll. 25-27; **08/132,812 (October 6, 1993)** p. 9, ll. 28-31; p. 79, ll. 5-14; p. 79, l. 31- p. 80, l. 1; p. 81, ll. 3-5.
a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising	**09/144,897 (September 1, 1998)** p. 7, l. 13 - 8, l. 14; p. 18, ll. 8-29; Figures 4a-4b; p. 64, ll. 28-33; p. 65, ll. 20-28; p. 67, ll. 25-36;

from a first interference source; said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;	p. 114, ll. 3-16; Figures 26, 27. **08/859,837 (May 16, 1997)** p. 7, l. 13 - 8, l. 14; p. 8, l. 1-14; p. 18, ll. 8-29; Figures 4a-4b; p. 64, ll. 28-33; p. 65, ll. 20-28; p. 67, ll. 25-36; p. 114, ll. 3-16; Figures 26, 27. **08/320,154 (October 7, 1994)** p. 7, l. 13 - 8, l. 14; p. 8, l. 1-14; p. 18, ll. 8-29; Figures 4a-4b; p. 64, ll. 28-33; p. 65, ll. 20-28; p. 67, ll. 25-36; p. 114, ll. 3-16; Figures 26,27. **08/132,812 (October 6, 1993)** p. 9, l. 1 - 10, l. 7; p. 28, l. 25 – p. 29, l. 12; Figures 4a-4b; p. 79, ll. 5-10; p. 79, l. 31 - p. 80 l. 12; p. 81, ll. 3-23; p. 91, ll. 1-14; Figures 26, 27.
an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error output is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;	**09/144,897 (September 1, 1998)** p. 17, ll. 10-21; p. 18, ll. 6-10; Figures 4a-b; p. 19, l. 19 – p. 21, l. 22; Figures 5a-b; p. 37, l. 4 – p. 38, l. 24; p. 65, ll. 27-32; Figure 11. **08/859,837 (May 16, 1997)**

	p. 17, ll. 10-21; p. 18, ll. 6-10; Figures 4a-b; p. 19, l. 19 – p. 21, l. 22; Figures 5a-b; p. 37, l. 4 – p. 38, l. 24; p. 65, ll. 27-32; Figure 11. **08/320,154 (October 7, 1994)** p. 17, ll. 10-21; p. 18, ll. 6-10; Figures 4a-b; p. 19, l. 19 – p. 21, l. 22; Figures 5a-b; p. 37, l. 4 – p. 38, l. 24; p. 65, ll. 27-32; Figure 11. **08/132,812 (October 6, 1993)** p. 27, l. 30 – p. 28, l. 9; p. 28, ll. 22-26; Figures 4a-b; p. 30, l. 5 – p. 32, l. 18; Figures 5a-b; p. 52, l. 19 – 53, l. 30 p. 80, ll. 4 – 27; Figure 11.
wherein said first and second portions of said first and second generated signals and a first ratio constant have a defined mathematical relationship;	**09/144,897 (September 1, 1998)** p. 16, l. 25 – p. 17, l. 8; p. 18, l. 8 – p. 19, l. 9; Figures 4a-4b; p.23, ll. 9-29 and , in particular, Equations 5a, 5b; p. 120, ll. 23-30. **08/859,837 (May 16, 1997)** p. 16, l. 25 – p. 17, l. 8; p. 18, l. 8 – p. 19, l. 9; Figures 4a-4b; p.23, ll. 9-29 and , in particular, Equations 5a, 5b; p. 120, ll. 23-30. **08/320,154 (October 7, 1994)**

	p. 16, l. 25 – p. 17, l. 8; p. 18, l. 8 – p. 19, l. 9; Figures 4a-4b; p.23, ll. 9-29 and , in particular, Equations 5a, 5b; p. 120, ll. 23-30. **08/132,812 (October 6, 1993)** p. 28, l. 25 – p. 29, l. 28; Figures 4a, 4b; p. 34, l. 22 – p. 35, l. 8 and, in particular, Equations 5a, 5b; p. 107, ll. 14-22.
a reference signal generator to generate said reference signal based on a possible value of said first ratio constant; and	**09/144,897 (September 1, 1998)** p. 18, l. 30 – p. 19, l. 14; figures 4a, 4b; p. 36, l. 29 – p. 37, l. 31; p. 120, ll. 23-30. **08/859,837 (May 16, 1997)** p. 18, l. 30 – p. 19, l. 14; figures 4a, 4b; p. 36, l. 29 – p. 37, l. 31; p. 120, ll. 23-30. **08/320,154 (October 7, 1994)** p. 18, l. 30 – p. 19, l. 14; figures 4a, 4b; p. 36, l. 29 – p. 37, l. 31; p. 120, ll. 23-30. **08/132,812 (October 6, 1993)** p. 43, ll. 4-24 Figures 4a, 4b; p. 52, l. 9 – p. 53, l. 6; p. 107, ll. 14-22
a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value	**09/144,897 (September 1, 1998)** p. 22, l. 24 – p. 23, l. 29, and in particular, Equation 5b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/859,837 (May 16, 1997)**

of said first ratio constant.	p. 22, l. 24 – p. 23, l. 29, and in particular, Equation 5b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/320,154 (October 7, 1994)** p. 22, l. 24 – p. 23, l. 29, and in particular, Equation 5b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/132,812 (October 6, 1993)** p. 33, l. 32 – p. 35, l. 8, and in particular, Equation 5b; p. 53, ll. 7-30; Figures 7a-c.

Claim 16

The system of Claim 15 wherein said output signal received by said peak detector is selected from a set of output signals comprising approximations to said first and second signal portions of said first and second signals, wherein said error output and said adaptive filter output generate output signals of said set.	**09/144,897 (September 1, 1998)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b. **08/859,837 (May 16, 1997)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b. **08/320,154 (October 7, 1994)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b. **08/132,812 (October 6, 1993)** p. 31, l. 21 – p. 32, l. 10; Figures 5a-b.

Claim 17

The system of Claim 15, further including an oxygen saturation calculating circuit to determine blood oxygen saturation of the subject based on said calculated value of said first ratio constant.	**09/144,897 (September 1, 1998)** p. 62, l. 17 - p. 63, l. 31; p. 117, ll. 6 - 18; p. 86, l. 6 – p. 89, l. 16;

	Figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18. **08/859,837 (May 16, 1997)** p. 62, l. 17 - p. 63, l. 31; p. 117, ll. 6 - 18; p. 86, l. 6 – p. 89, l. 16; Figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18. **08/320,154 (October 7, 1994)** p. 62, l. 17 - p. 63, l. 31; p. 117, ll. 6 - 18; p. 86, l. 6 – p. 89, l. 16; Figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18. **08/132,812 (October 6, 1993)** p. 96, ll. 10-18; p. 101, l. 35 - p. 102, l. 19; p. 76, l. 32 - p. 77, l. 35.

Claim 18

The system of Claim 15, further including a data table interrelating said calculated value of said first ratio constant with blood oxygen saturation level.	**09/144,897 (September 1, 1998)** p. 86, l. 6 – p. 89, l. 16; Figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18. **08/859,837 (May 16, 1997)** p. 86, l. 6 – p. 89, l. 16; Figure 19; p. 79, ll. 12-15; Figure 17;

	p. 81, ll. 19-26; Figure 18. **08/320,154 (October 7, 1994)** p. 86, l. 6 – p. 89, l. 16; Figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18.

Claim 19

The system of Claim 15 wherein said first and second wavelengths are in the red and infrared wavelength range, respectively.	**09/144,897 (September 1, 1998)** p. 22, ll. 3-15; p. 42, l. 17; p. 65, ll. 20-24; p. 79, ll. 8-12; p. 116, ll. 10-13. **08/859,837 (May 16, 1997)** p. 22, ll. 3-15; p. 42, l. 17; p. 65, ll. 20-24; p. 79, ll. 8-12; p. 116, ll. 10-13. **08/320,154 (October 7, 1994)** p. 22, ll. 3-15; p. 42, l. 17; p. 65, ll. 20-24; p. 79, ll. 8-12; p. 116, ll. 10-13. **08/132,812 (October 6, 1993)** p. 33, ll. 8-20; p. 57, l. 16; p. 79, l. 32 – p. 80, l. 12.

Claim 20

The system of Claim 15 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ and $s_1 = r_a s_2$ where s_1 corresponds to said first portion of said first generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	**09/144,897 (September 1, 1998)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, l. 4. **08/859,837 (May 16, 1997)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, l. 4. **08/320,154 (October 7, 1994)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, l. 4.

Claim 21

The system of Claim 15 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ where s_2 corresponds to said first portion of said second generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	**09/144,897 (September 1, 1998)** p. 15, ll. 29-36; p. 16, l. 25-p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, ll. 1-4. **08/859,837 (May 16, 1997)** p. 15, ll. 29-36; p. 16, l. 25-p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, ll. 1-4. **08/320,154 (October 7, 1994)** p. 15, ll. 29-36; p. 16, l. 25-p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, ll. 1-4.

Claim 22

A method for the enhancement of physiological signals for the measurement of blood oxygen in a subject	**09/144,897 (September 1, 1998)** p. 6, ll. 4-9; p. 6, l. 25 – p. 7, l. 13; p. 63, l. 33 – p. 64, l. 12. **08/859,837 (May 16, 1997)** p. 6, ll. 4-9; p. 6, l. 25 – p. 7, l. 13; p. 63, l. 33 – p. 64, l. 12. **08/320,154 (October 7, 1994)** p. 6, ll. 4-9;

	p. 6, l. 25 – p. 7, l. 13; p. 63, l. 33 – p. 64, l. 12. **08/132,812 (October 6, 1993)** p. 7, ll. 27-31; p. 8, l. 18 – p. 9, l. 8; p. 78, ll. 4-13.
the method comprising the steps of:	
directing light from first and second light sources of different wavelengths toward the subject;	**09/144,897 (September 1, 1998)** p. 8, ll. 1-4; p. 64, l. 25 – p. 65, l. 1; p. 65, ll. 18-24; p. 67, ll. 25-27. **08/859,837 (May 16, 1997)** p. 8, ll. 1-4; p. 64, l. 25 – p. 65, l. 1; p. 65, ll. 18-24; p. 67, ll. 25-27. **08/320,154 (October 7, 1994)** p. 8, ll. 1-4; p. 64, l. 25 – p. 65, l. 1; p. 65, ll. 18-24; p. 67, ll. 25-27. **08/132,812 (October 6, 1993)** p. 9, ll. 28-31; p. 79, ll. 5-14; p. 79, l. 31 – p. 80, l. 1.
detecting signals from said first and second light sources after interaction with the subject and generating first and second signals corresponding to an intensity of said first and second detected signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference source, said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference source;	**09/144,897 (September 1, 1998)** p. 7, ll. 13-36; p. 8, ll. 1-14; p. 18, ll. 8-29; Figure 4a-4b; p. 64, ll. 28-33; p. 65, ll. 20-28; p. 67, ll. 25-36; p. 114, ll. 3-16; Figure 26, 27. **08/859,837 (May 16, 1997)** p. 7, ll. 13-36; p. 8, ll. 1-14; p. 18, ll. 8-29;

	Figure 4a-4b; p. 64, ll. 28-33; p. 65, ll. 20-28; p. 67, ll. 25-36; p. 114, ll. 3-16; Figure 26, 27. **08/320,154 (October 7, 1994)** p. 7, ll. 13-36; p. 8, ll. 1-14; p. 18, ll. 8-29; Figure 4a-4b; p. 64, ll. 28-33; p. 65, ll. 20-28; p. 67, ll. 25-36; p. 114, ll. 3-16; Figure 26, 27. **08/132,812 (October 6, 1993)** p. 9, l. 8 - p. 10, l. 26; p. 28, l. 25 – p. 29, l. 12; Figures 4a-4b; p. 79, ll. 5-10; p. 79, l. 31 – p. 80, l. 6; p. 94, ll. 9-19; Figures 24, 25.
coupling said first generated signal to a signal input of an adaptive signal processor having an adaptive filter having an input to receive a reference signal, and an output, and an error output generating an error signal wherein said error signal is coupled to said adaptive filter to adjust said adaptive filter so that a function of said error signal has a minimum;	**09/144,897 (September 1, 1998)** p. 17, ll. 10-21; p. 18, ll. 6-10; Figures 4a-b; p. 19, l. 19 – p. 21, l. 15; Figures 5a-b; p. 37, l. 4 – p. 38, l. 24; p. 65, ll. 27-32; Figure 11. **08/859,837 (May 16, 1997)** p. 17, ll. 10-21; p. 18, ll. 6-10; Figures 4a-b; p. 19, l. 19 – p. 21, l. 15; Figures 5a-b; p. 37, l. 4 – p. 38, l. 24; p. 65, ll. 27-32; Figure 11.

	08/320,154 (October 7, 1994) p. 17, ll. 10-21; p. 18, ll. 6-10; Figures 4a-b; p. 19, l. 19 – p. 21, l. 15; Figures 5a-b; p. 37, l. 4 – p. 38, l. 24; p. 65, ll. 27-32; Figure 11. **08/132,812 (October 6, 1993)** p. 27, l. 30 – p. 28, l. 9; p. 28, ll. 22-28 Figures 4a-b; p. 30, l. 5 – p. 32, l. 30; Figures 5a-b; p. 53, ll. 7-30; p. 79, l. 30 - p. 80, l. Figure 11.
coupling an output signal from said adaptive signal processor to a peak detector and calculating a first ratio value corresponding to a first detected peak value of said error signal over a predetermined range of possible ratio values;	**09/144,897 (September 1, 1998)** p. 36, l. 29 – p. 37, l. 31; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/859,837 (May 16, 1997)** p. 36, l. 29 – p. 37, l. 31; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/320,154 (October 7, 1994)** p. 36, l. 29 – p. 37, l. 31; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/132,812 (October 6, 1993)** p. 52, l. 9 – p. 53, l. 30; Figures 7a-c;

generating a first reference signal based on a mathematical relationship of said first and second portions of said first and second generated signals, and said first ratio value; and	**09/144,897 (September 1, 1998)** p. 16, l. 25 – p. 17, l. 8; p. 18, l. 8 – p. 19, l. 14; Figures 4a-4b; p. 23, ll. 9-29 and, in particular, Equations 5a, 5b; p. 120, ll. 23-30. **08/859,837 (May 16, 1997)** p. 16, l. 25 – p. 17, l. 8; p. 18, l. 8 – p. 19, l. 14; Figures 4a-4b; p. 23, ll. 9-29 and, in particular, Equations 5a, 5b; p. 120, ll. 23-30. **08/320,154 (October 7, 1994)** p. 16, l. 25 – p. 17, l. 8; p. 18, l. 8 – p. 19, l. 14; Figures 4a-4b; p. 23, ll. 9-29 and, in particular, Equations 5a, 5b; p. 120, ll. 23-30. **08/132,812 (October 6, 1993)** p. 27, ll. 28-32; p. 28, l. 25 – p.29, l. 33; Figures 4a-4b; p. 34, l. 22 – p. 35, l. 8 and, in particular, Equations 5a,5b; p. 107, ll. 14-22
coupling said first reference signal to said adaptive filter input wherein said filter output generates an estimate of said first portion of said first generated signal.	**09/144,897 (September 1, 1998)** p. 20, l. 29 – p. 21, l. 15; Figure 5b; p. 22, l. 24 – p. 23, l. 29; **08/859,837 (May 16, 1997)** p. 20, l. 29 – p. 21, l. 15; Figure 5b; p. 22, l. 24 – p. 23, l. 29; **08/320,154 (October 7, 1994)** p. 20, l. 29 – p. 21, l. 15; Figure 5b; p. 22, l. 24 – p. 23, l. 29;

	08/132,812 (October 6, 1993) p. 31, l. 21 – p. 32, l. 10; Figure 5b; p. 33, l. 32 – p. 35, l. 8

Claim 23

The method of Claim 22 wherein said output signal from said adaptive signal processor is said error signal and said calculated first ratio value is based on said first detected peak value in said error signal.	**09/144,897 (September 1, 1998)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/859,837 (May 16, 1997)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/320,154 (October 7, 1994)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/132,812 (October 6, 1993)** p. 31, l. 21 – p. 32, l. 10; Figures 5a-5b; p. 53, ll. 6-30; Figures 7a-c;

Claim 24

The method of Claim 22 wherein said output signal from said adaptive signal processor is derived from said adaptive filter output and said calculated first ratio value is based on said first detected peak value in said output signal derived from said adaptive filter	**09/144,897 (September 1, 1998)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c;

output.	p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/859,837 (May 16, 1997)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/320,154 (October 7, 1994)** p. 20, l. 29 – p. 21, l. 15; Figures 5a-b; p. 37, l. 32 – p. 38, l. 24; Figures 7a-c; p. 80, l. 36 – p. 81, l. 26; Figure 18. **08/132,812 (October 6, 1993)** p. 31, l. 21 – p. 32, l. 10; Figures 5a-b; p. 53, ll. 6-30; Figures 7a-c;

Claim 25

The method of Claim 24, further including the step of generating an approximation to said first portion of said second generated signal based on said mathematical relationship and said calculated first ratio value.	**09/144,897 (September 1, 1998)** p. 21, ll. 2-8; Figure 5a; p. 22, l. 3 – p. 23, l. 18 **08/859,837 (May 16, 1997)** p. 21, ll. 2-8; Figure 5a; p. 22, l. 3 – p. 23, l. 18 **08/320,154 (October 7, 1994)** p. 21, ll. 2-8; Figure 5a; p. 22, l. 3 – p. 23, l. 18 **08/132,812 (October 6, 1993)** p. 31, l. 30 – p. 32, l. 3; Figure 5a; p. 33, l. 8 – p. 34, l. 32.

Claim 26

The method of Claim 25 wherein said first ratio value is a ratio of said first portion of said first generated signal to said first portion of said second generated signal.	**09/144,897 (September 1, 1998)** p. 22, l. 3 – p. 23, l. 29, and, in particular, Equation 3; p. 120, ll. 23-30. **08/859,837 (May 16, 1997)** p. 22, l. 3 – p. 23, l. 29, and, in particular, Equation 3; p. 120, ll. 23-30. **08/320,154 (October 7, 1994)** p. 22, l. 3 – p. 23, l. 29, and, in particular, Equation 3; p. 120, ll. 23-30. **08/132,812 (October 6, 1993)** p. 33, l. 8 – p. 34, l. 32, and in particular Equation 3; p. 107, ll. 14-22.

Claim 27

The method of Claim 22, further including the step of determining a blood oxygen saturation level of the subject based on said calculated first ratio value.	**09/144,897 (September 1, 1998)** p. 79, ll. 12-15; p. 117, ll. 6-18; p. 62, l. 17 - p. 63, l. 31; Figure 17; p. 81, ll. 19-26; Figure 18; p. 86, l. 6 – p. 89, l. 16; Figure 19. **08/859,837 (May 16, 1997)** p. 79, ll. 12-15; p. 117, ll. 6-18; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18; p. 86, l. 6 – p. 89, l. 16; Figure 19.

	08/320,154 (October 7, 1994) p. 79, ll. 12-15; p. 117, ll. 6-18; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18; p. 86, l. 6 – p. 89, l. 16; Figure 19. **08/132,812 (October 6, 1993)** p. 96, ll. 10-18; p. 101, l. 35 - p. 102, l. 19; p. 76, l. 32 - p. 77, l. 35.

Claim 28

The method of Claim 22, further including the step of determining a blood oxygen saturation level of the subject using a data table interrelating said calculated first ratio value with blood oxygen saturation level.	**09/144,897 (September 1, 1998)** p. 86, l. 6 – p. 89, l. 16; figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18. **08/859,837 (May 16, 1997)** p. 86, l. 6 – p. 89, l. 16; figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18. **08/320,154 (October 7, 1994)** p. 86, l. 6 – p. 89, l. 16; figure 19; p. 79, ll. 12-15; Figure 17; p. 81, ll. 19-26; Figure 18.

Claim 29

The method of Claim 22 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ and $s_1 = r_a s_2$ where s_1 corresponds to said first portion of said first generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	**09/144,897 (September 1, 1998)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, l. 4 **08/859,837 (May 16, 1997)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, l. 4 **08/320,154 (October 7, 1994)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, l. 4

Claim 30

The method of Claim 22 wherein said mathematical relationship has the following form: $s_2 = (S_{red} - r_v S_{IR})/(r_a - r_v)$ where S_2 corresponds to said first portion of said second generated signal, S_{red} corresponds to said first generated signal, including said first and second portions of said first generated signal, S_{IR} corresponds to said second generated signal, including said first and second portions of said second generated signal, r_a is said first ratio constant and corresponds to a ratio of said first portion of said first generated signal to said first portion of said second generated signal, and r_v is a second ratio constant and corresponds to a ratio of said second portion of said first generated signal to said second portion of said second generated signal.	**09/144,897 (September 1, 1998)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, ll. 4 **08/859,837 (May 16, 1997)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, ll. 4 **08/320,154 (October 7, 1994)** p. 15, ll. 29-36; p. 16, l. 25 – p. 17, l. 6; p. 98, l. 22 – p. 99, l. 2; p. 99, l. 24 – p. 100, ll. 4

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 21, 2006

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